

# **Alaska Seasonal Fire Weather/Fire Danger Outlook 2006**

Predictive Services AICC  
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## **Executive Summary**

The Alaska fire season for 2006 is expected to be normal in eastern Alaska and above normal in southwest Alaska and portions of the western Kenai Peninsula where large areas of bug killed spruce have caused a potential fuels problem. (figure 1.) This forecast is based on known fuels conditions and snow pack as well as the current seasonal forecasts for the coming summer.

The current forecast for the start of the fire season calls for an elevated chance of warmer than normal temperatures in the west and southwest of Alaska through most of the summer and equal chances of above, below or normal in the east. The snow pack for most of Alaska for the winter 2006, is normal to below normal. Deficits in the snow pack occur at lower elevations on the Kenai Peninsula, McGrath coastal areas, Southeast Alaska, low elevations through the Anchorage area and near Delta Junction in the Tanana Valley.

Insect infestation on the Kenai Peninsula has caused over a million and a half acres of bug kill spruce. A similar situation exists in the Copper River Valley. These areas of hazardous fuels are not going away and are only waiting for the right weather and ignition opportunities to cause large fire problems.

Given the above conditions and weather forecasts the area of most significant concern is the western Kenai Peninsula. The low snow pack at lower elevations and the potential for warmer than normal temperatures, combine to create the elevated fire potential over the areas with beetle killed spruce on the Kenai Peninsula.

The above normal temperatures forecast through western Alaska may lead to a busier fire season in the west and southwest. The challenge in seasonal forecasting in Alaska is that we do not currently have the skill to definitively determine the weather features that control the nature and scope of the fire seasons. Although above normal temperatures are forecast over western Alaska this summer, the timing and nature of precipitation and length of dry periods is not known. These things have a great effect on the fire seasons in Alaska.

A forecast of cooler temperatures through mid April may balance out the meager snow pack in some areas with a closer to normal snow free dates and start of fire season.

The confidence level of this assessment is moderate. The timing and duration of precipitation and length of dry periods can make a big difference in whether conditions develop that are conducive to significant fire growth or an active fire season. The lightning season in Alaska does not normally begin until late May, and the prognosis for lightning occurrence accompanied by dry weather is not clear at this time.

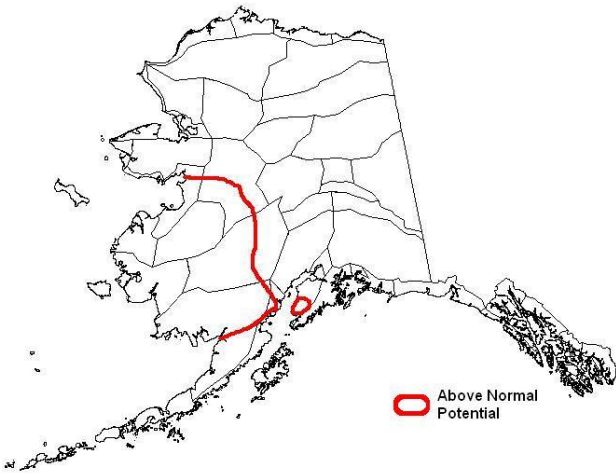


Figure 1. Depiction of fire potential in Alaska, 2006 season.

## Introduction and Objectives

The objective of this report is to assess factors leading up to the 2006 wildland fire season in Alaska and provide information and recommendations that can improve preparedness for fire management agencies. This report is based on past developments, current trends and conditions, and future predictions of fuels and weather. Long range predictions of fire weather and fire occurrence are problematic at best and should be viewed with caution and the understanding that confidence level decreases further into the future.

## Current Conditions

The winter of 2005-2006 was warmer than normal in the fall, particularly in southern Alaska. This was followed by one of the coldest Januarys on record. Winter snow pack over most of the state is below normal especially in the lower elevations in southwest, south-central and southeast Alaska. Many low-lying areas in the southern portion of the state are close to snow free.

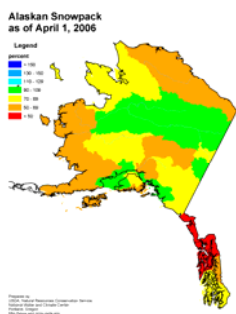
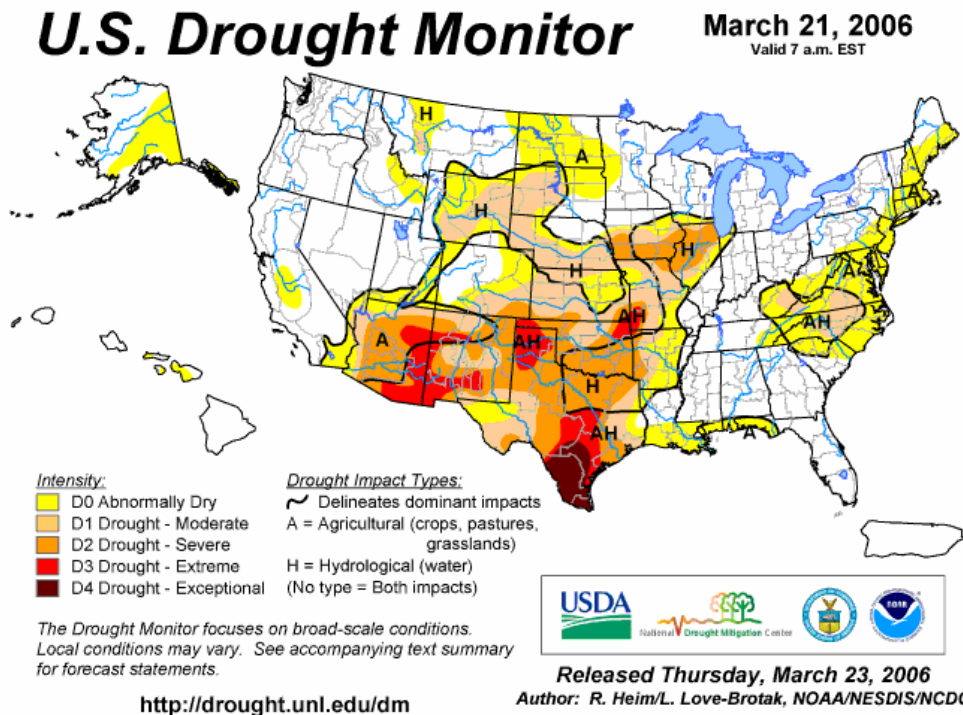


Figure 2. Snow pack percent of normal for Alaska, April 1, 2006.

The U.S. Drought Monitor indicates abnormally dry conditions in a band running from the south-western coastal region to the north-eastern Alaska-Canadian border. Although the category is the lowest of the drought values from normal, this is a factor to consider in the overall assessment.



Insect infestation has occurred on the Kenai Peninsula with over a million and a half acres of beetle-kill spruce. Much of the extreme crown fire danger (red needle phase) has passed. The forest composition has evolved with time, leaving snag fields with an under-story of blue joint grass (*Calamagrostis canadensis*). Punky wood is left from the over-story of Lutz spruce (a hybrid of White and Sitka Spruce). The fuel complex consists of flashy fuels mixed with heavy dead and down large fuels. This could lead to a high resistance to control. Large expanses of beetle-kill spruce also exist in the Copper River Valley.

## Climate and Weather Outlooks

In contrast to the past several years, the atmosphere is in a weak La Nina phase. In the past, weak La Nina years have resulted in normal to below normal number of acres burned. Though the persistence of the La Nina conditions is uncertain, this pattern suggests a more normal fire season ending in the end of July to mid August time frame.

Forecasts from the Climate Prediction Center for April show normal temperatures and equal chances of above or below normal precipitation across the state though the first week of April appears to be cooler than normal. The outlook for April-May-June calls for warmer than normal through the west half of the state with no forecast for precipitation. .

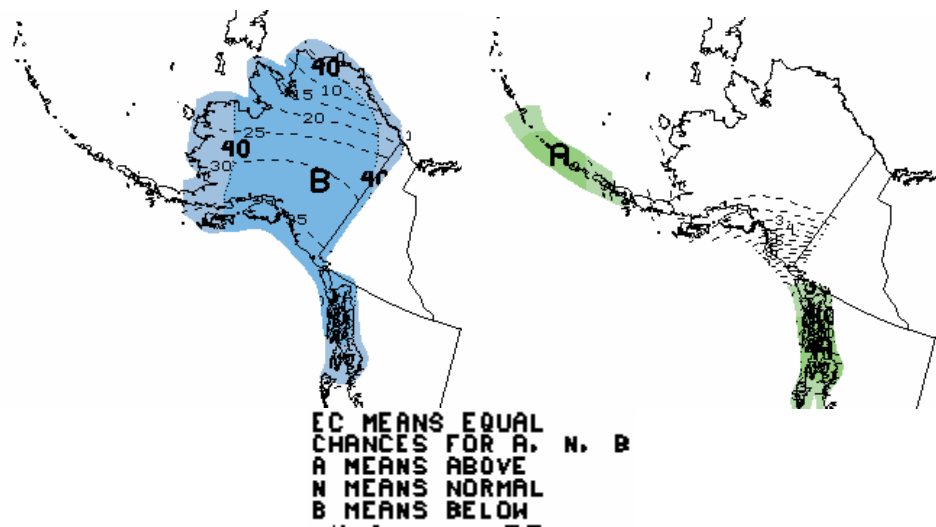


Figure 3. Temperature and Precipitation Outlook for mid April, 2006

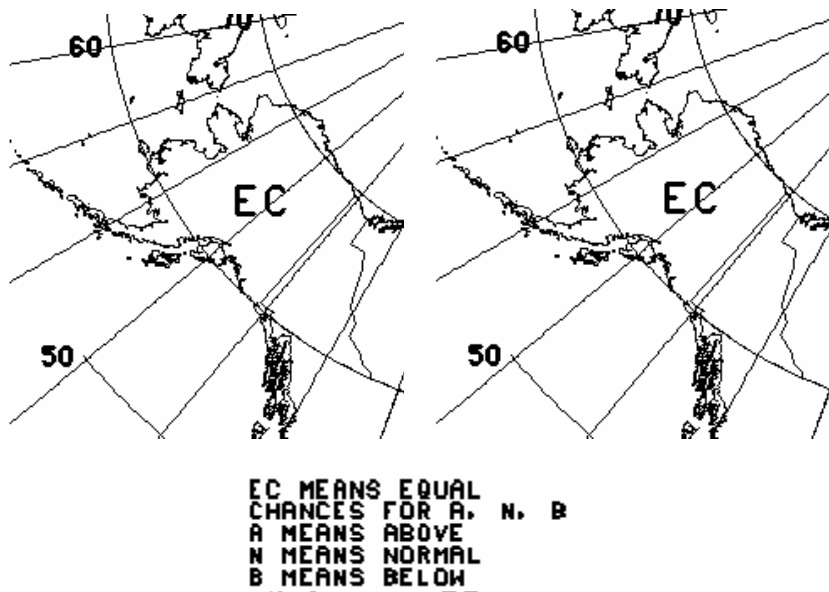


Figure 4. Temperature and Precipitation Outlook for April, 2006

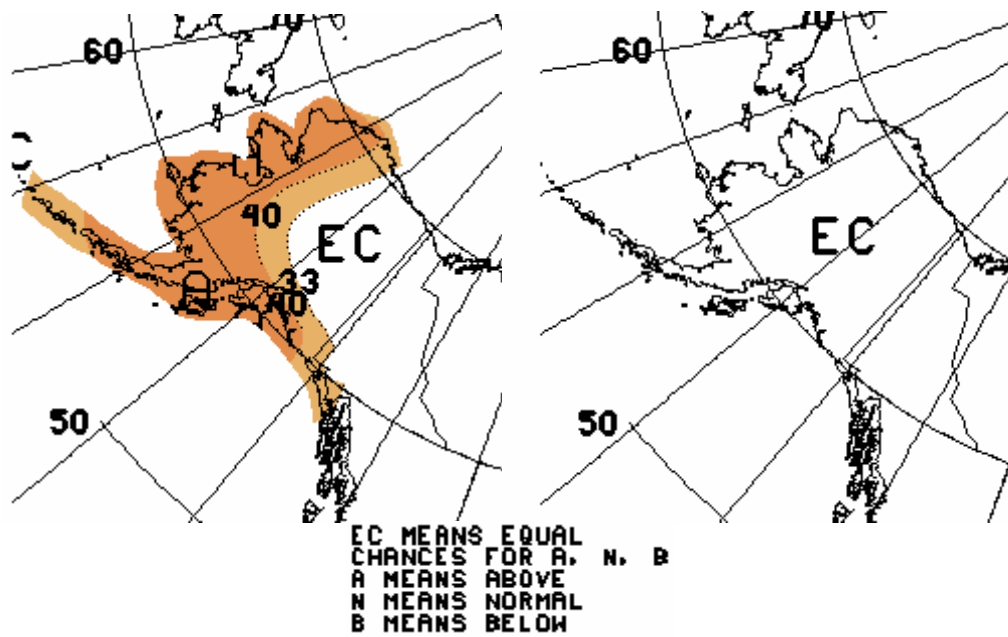


Figure 5a. Climatological Projections for May-June-July, 2006.

The forecast for June-July-August continues the trend of warmer than normal temperatures only in the west while making no specific prediction for precipitation. Three month forecasts beyond that tend to decrease the area of warmer than normal temperatures and do not make specific predictions for temperature or precipitation for Alaska.

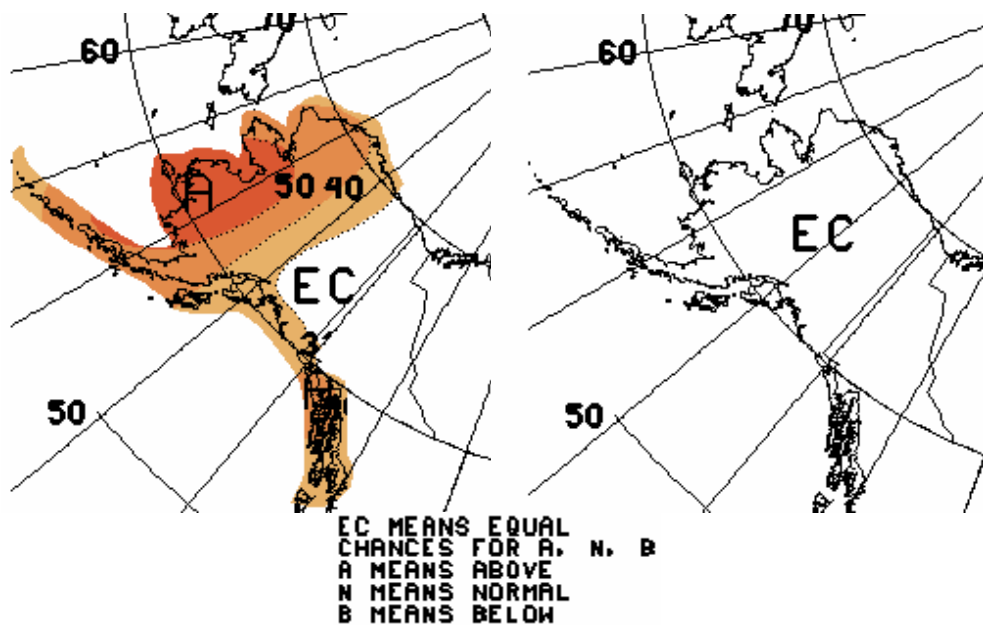


Figure 5b. Climatological Projections for June-Jul-August, 2006.

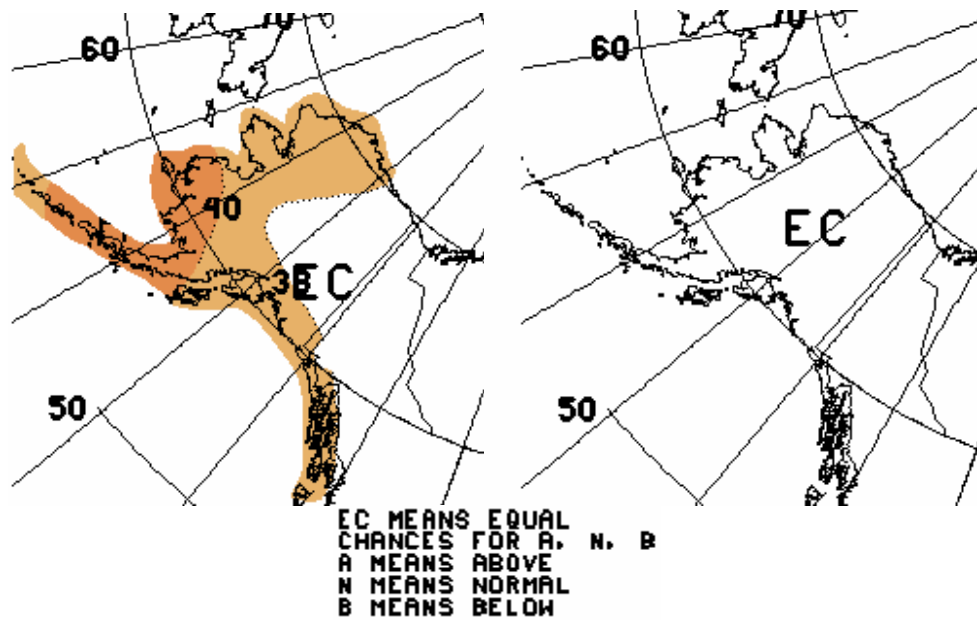


Figure 5c. Climatological Projections for July- August-September, 2006.

### Fire Occurrence and Resource Outlooks

Fire occurrence and resource outlooks will primarily address the short term, prior to the lightning season. A 10 year running average of past annual wildland fire acres burned compared with annual acres burned from 1955-2005 is provided below for reference purposes.

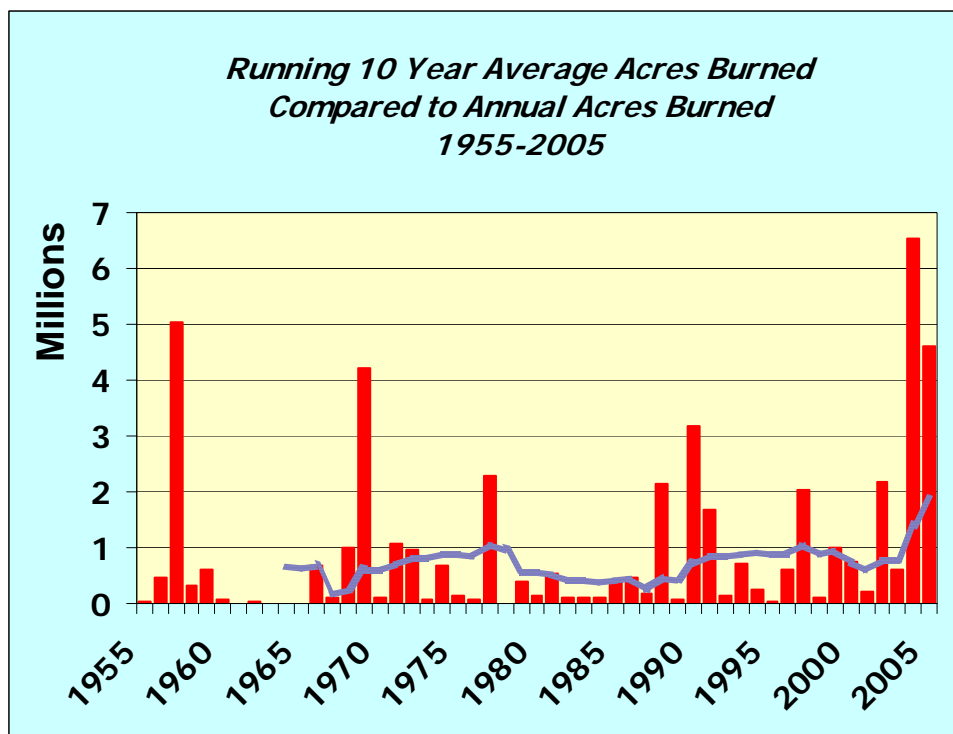


Figure 6. Alaska Wildland Fires Running 10 Year Average Acres Burned Compared to Annual Acres Burned, 1955-2004.

The critical factors for fire potential during the lightning season are the amount of moisture received just prior to and following green up, as well as the amount of moisture that accompanies the lightning. There are few antecedent conditions that we can point to that will help predict the nature of the fire season. Fire seasons in Alaska have had minimal fire activity following over-winter drought and warm, dry springs and other fire seasons have had significant fire activity following heavy snow pack winters and cold, wet springs. The degree of surface heating and the timing and nature of precipitation and thunderstorms play a critical role in how the lightning season develops. The most active fire seasons in Alaska are invariably those that have an early human-caused season, significant lightning without much rain, and subsequent frontal passages and extended dry periods to sustain combustion.

## **Future Scenarios and Probabilities**

The most likely scenario for the 2006 fire season in Alaska is based on the seasonal forecast presented earlier as well as fuels conditions and implications of the weak La Nina. The confidence level associated with development of this scenario is moderate, with confidence decreasing toward the end of the time period.

**Scenario 1: (Most likely scenario). Cool first half of April with snow free dates occurring near normal. Warmer than normal temperatures over western Alaska through most of the summer becoming more normal by the end of the season. Average to slightly below average precipitation levels across most of the state through the summer. Temperatures and precipitation trending towards normal with a normal end of the fire season in August.**

Under this scenario, fire season will start in a normal time frame then quickly ramp up in western and southwestern Alaska due to the warmer than normal temperatures in the west and low snowpack in the southwest. Western Alaska is expected to have above normal fire potential due to the warmer temperatures. Conditions could be slightly more active through June to early July then slowly taper off in late July through August. With moderate lightning activity and probability of ignition increasing in the latter part of May, large fire growth and activity will increase but will be dominated by local environmental influences not drought. The increased fire potential on the Kenai Peninsula will peak in June to early July.

**Scenario 2: Warmer than normal temperature lasting through July with a delay in the end of season rains to late August. Lightning season beginning in late May and persisting through July.**

This scenario would cause a fire season similar in character, but not in size to 2004 or 2005. The likelihood of a third very busy fire season is low. Fire danger incidences will increase significantly in May and remain high through June.

However occasional light rain will keep the fires from spreading to the extent they did in 2004 and 2005. However, a decrease in the amount of rainfall occurring later in the summer would increase duration of fires started earlier in the season and exacerbate smoke impacts. Large problematic fires would be likely. The limited moisture later in the season would also lead to increased fire intensities and increase resistance to control and extinguishment for those fires that are actively suppressed. Resource shortages would likely occur due to competition for national suppression resources needed in other parts of the country.

**Scenario 3: No warmer than normal temperature trend in early spring with snow free dates occurring in normal timeframes, normal precipitation trend in the spring, lightning season beginning in June, and a wet, cool trend persisting through July.**

Under this scenario, the fire season would be minimal. Some human and lightning caused fires could occur, but the likelihood of large fires would be low.

### **Management Implications and Concerns**

Though this is not the most likely scenario, the main management concern would be to have another very busy fire year in 2006. The forecast of season ending rainfall occurring in the normal time frame of late July, to mid August is crucial. The later the Alaskan fire season lasts, the more competition there will be with other geographic areas for fire resources as the season in the lower 48 gears up. Another management concern is risks to the public and to firefighters if fires occur in the wildland-urban interface in beetle-killed spruce stands on the Kenai Peninsula, Anchorage Hillside and Copper River Basin. Safe ingress and egress for firefighters is difficult, and the combination of flashy surface fuels, dead down debris and lichen-laden dead branches of standing infested trees extending to the ground presents significant hazards during an active early season. The largest developing risk for the 2006 wildland fire season is from fires occurring within and adjacent to human development. In addition, if the trend of dry weather in August and increased lightning in south-central Alaska continues we will continue to have extreme fire seasons with significant smoke impacts.

### **Summary and Recommendations**

#### **Suppression:**

With the current snow and moisture conditions in the state and the cool start to April, early season fire activity should normal. Late spring fire and summer fire activity should increase rapidly in western and southwest Alaska predictions at this time are based on statistical averages. Prescribed fire objectives may be difficult to meet if air quality become degraded due to an active fire season and prescribed fires are limited. A high degree of fire readiness and preparedness is warranted given recent past fire occurrence and some probabilities for similar conditions and fire behavior.

#### **Prevention:**



Prevention and outreach efforts should be increased to make the public aware of the fire risk. Efforts should be targeted at guides and hunters regarding prudent use and proper construction of warming and cooking fires. Fire Wise information should be publicized and provided to the public before significant risks develop. Fire season information should be widely distributed to homeowners so they are aware of the implications of careless debris burning or other activities that can lead to wildland fire occurrence. Public education about open burning and permitting should be issued in public service announcements across the state. Increased public, state and municipal awareness of smoke issues may affect the amount of time required to receive permits for prescribed fires.